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SURVEY OF THE REPTILES OF THE  
SHEIKHDOM OF ABU DHABI,  
ARABIAN PENINSULA  
PART I. A GEOGRAPHICAL SKETCH OF THE  
SHEIKHDOM OF ABU DHABI

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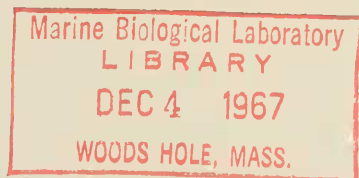
INTRODUCTION

In 1964 the author was employed as site engineer on the construction of a road across the sand dunes in the vicinity of Habshān-Bu Hasa, Abu Dhabi [Abū Zaby]. During this period a small but highly significant collection of reptiles was assembled and sent to the California Academy of Sciences. Drs. Leviton and Anderson of that institution have studied the collection and their results are presented as part II of this report. However, in view of the fact that little descriptive information is available in the literature for the Trucial States, and in anticipation of the rapid and drastic changes which may be expected in this region in the immediate future, this geographical sketch is presented first.

GEOGRAPHY

The Arabian Peninsula, perhaps more properly classed as a subcontinent because of its large size and unique ethnic and geographic features, bulges north-easterly in its southern extent. A projection of this bulge, directed toward Iran and the Asian mainland, forms the southern bank of the Strait of Hormoz, which divides the Persian Gulf from the Gulf of Oman and the Arabian Sea

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(fig. 1). On the gulf coast and at the western base of the projection into the Persian Gulf lies Abu Dhabi (also transliterated as Abū Zābi ["Father of a Gazelle"] in Arabic<sup>1</sup>).

Although almost all of the political boundaries of Abu Dhabi are in dispute, the geographical limits are clear. To the west is the Subkhat Matti, an immense saline tideland flat (approximately 6700 sq. km.) of sand and silt, extending inland in its southern extent some 40 kilometers. Abu Dhabi is bordered to the south by the Rub' al Khali ("The Empty Quarter"), a sand waste of 650,000 sq. km., certainly one of the most barren deserts on the globe; the Oman Mountains, Al Hajar al Gharbī in Arabic, formed largely of pre-Cambrian rocks, rise on the eastern border of the sheikhdom to nearly 3000 meters elevation. The northern coast is some 450 kilometers in length, and bathed by the Persian Gulf, a highly saline, relatively shallow body of water with a tidal action of 1.8 to 2.1 meters.

With the exception of Al Liwā' and Al Buraymī [Al Burmaymī], two complexes of oases, Abu Dhabi presents some of the most bleak and forsaken land and forbidding climatic conditions on earth. It is the life-giving waters of the oases and the unbelievably meager animal husbandry that make human existence possible.

Al Liwā' is a complex of about 30 continuously inhabited and cultivated oases, and as many more uninhabited small oases nestled in valleys formed by great sand ridges that reach over 200 meters above the desert floor. The oases are spread over some 100 kilometers at about 23° N., along the northern fringe of the Rub' al Khali. Here, the abundant and palatable ground water provides for agriculture, date palms, and some types of citrus. Other fruits and vegetables are also cultivated. In the spring and winter months the Bedouins of the Manasir and Bani Yas tribes take their flocks into the great sands to the south or to the coast in the north, and the oases are practically abandoned. As the summer arrives, the humidity becomes unbearable on the coast, the wells in the big sands of the desert become dry, and the nomads return to Al Liwā'. It is said that at the time of date harvest there are some 3000 people in the Liwā' (Mann, 1964). Water is supplied in abundance (for the present population, at least) from the Oman Mountains to the east and Jabal Ḥafīt to the south. This water supply is effected by a system of underground conduits, the "falaj," such as are numerous in Iran and Afghanistan. This ancient system traps waters of subsurface strata fed by mountain rainwaters, and the water is carried at a fixed gradient beneath the surface, coming to daylight at some arable land as much

<sup>1</sup> Transliteration from Arabic is not standardized, and common usage does not always agree with "official" transliteration. In this paper common usage is employed, and in appropriate places the transliteration used by the U. S. Board on Geographic Names, Gazetteer No. 54, and shown on the map "Arabian Peninsula," 1963, Map I-270 B-2, 1:2,000,000, U. S. Geological Survey is indicated.

as 30 or 40 kilometers distant (in the case of Buraymī; perhaps four or five times this distance in places in Iran and Afghanistan), through a tunnel connected by wells spaced about 50 meters apart. Such wells allow facility of construction and subsequent maintenance of the tunnel. The population of Buraymī is estimated at about 9000 people during the summer and at harvest, some 6000 remaining during the winter and spring when some of the Bedouin move their flocks into the desert (Mann, 1964). The sedentary population of Buraymī is growing daily as the nomadic Bedouin are lured away from the frugal life of the desert with the advent of modern well-drilling technique and the deep-well pump, paid for by the government. The agricultural potential of the Buraymī area is being put to the test more and more with the passing of each season.

Other than the small villages at Buraymī, Abu Dhabi has but one native town, the town of Abu Dhabi itself. Situated on a small, low-lying island, the water supply, historically from a group of brackish wells, has always been poor. The island is separated from the mainland by a shallow sea channel some 150 meters across. The town of Abu Dhabi is on the seaward end of the island, some 15 kilometers from the mainland. Until recently a mud-hut village, Abu Dhabi is rapidly being transformed as modern buildings take shape everywhere. The population is not appreciably changed and has been estimated at about 5000 (Mann, 1964). Of this population, Major Mann says, “. . . in summer about 2000 of them leave for the oases of the interior. Of this population 60 are westerners, 650 Indians and 1000 Pakistanis and Baluchis.”

Three other enclaves of habitation of a permanent nature recently have been established in Abu Dhabi in connection with the country's oil development. Tarif [Aṭ Ṭarīf] has a population of about 1000 people, most of whom are expatriates. The oil shipping terminal, known as Jabal Dhannah, is 120 kilometers further west at Az Zannah, where there is a population of a few hundred, again very few being natives of Abu Dhabi. Dās Island, also with a population of over 1000 foreigners, is the third such installation. Dās Island is one of perhaps 100 small islands off the Persian Gulf coast, none of which have been of historical importance except as the haunts of pearlers, fishermen, and perhaps pirates and slaverunners until Dās Island, some 110 kilometers off the coast, became the site of an important oil discovery in 1958.

The total population has been estimated at 17,500 individuals (Mann, 1964) in summer, somewhat less in winter, but estimates are difficult due to the nomadic nature of the inhabitants. It is interesting to note that the people of

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FIGURE 1. Peninsula of Trucial Oman and adjacent territory of Saudi Arabia. Principal towns and oases are indicated. Photographic reproduction of United States Geological Survey map, "Arabian Peninsula," 1963, Map I-270 B 2, 1:2,000,000.







Tarif, Jabal Dhannah [Az Zannah], Dās Island, and the town of Abu Dhabi (in part) subsist on water evaporated or distilled from sea water or brought by barges from Bahrain Island or Dubai [Dubayy]. Recently (about 1965) a pipeline has been constructed to bring water almost 145 kilometers from wells in the vicinity of Buraymī to the town of Abu Dhabi.

#### CLIMATE

The climate of the Sheikhdōm of Abu Dhabi is severe. Air temperatures from May to the end of September commonly exceed  $38^{\circ}$  C., and between mid-June and mid-August shade temperatures soar to more than  $49^{\circ}$  and approach  $54^{\circ}$  C. During the summer months humidity on the coast is often at saturation, diminishing somewhat inland, although relative humidity of 90 percent has been noted 60 kilometers from the gulf. According to Mann (1964), Persian Gulf waters near shore reach temperatures of  $38^{\circ}$  C. Some days during the winter months are very pleasant, however. Especially following a rain, and on the rare days when the wind does not blow, the weather is ideal.

Rainfall, if any, occurs between November and April. Annual precipitation varies from less than 2.5 cm. to perhaps as much as 17.5 cm. The mean annual total is probably about 5.25 cm. There are no pronounced drainage features in Abu Dhabi except on the west flank of the Oman Mountains.

Winds are almost a daily occurrence during the winter months. Wind blows from the northwest, periodically changing direction 180 degrees to come from the southeast, moving the sand back and forth. Occasionally the wind will blow all day, sometimes continuously for three or four days (especially during the spring), although very rarely does the wind blow during the night. At times of lasting storms, although velocities are seldom in excess of 40 kilometers per hour, vast quantities of sand are moved. When storm conditions are in abeyance, the wind commences almost daily in the afternoon or evening, 2, 3, or 4 hours before sunset, and the lighter sands are wafted aloft and move across the face of the desert until the wind dies with the sunset.

#### PHYSIOGRAPHY

Within the geographical boundaries of Abu Dhabi—the great salt flats to the west, the steep, rocky mountains to the east, and the great sands to the south—there is a monotonous, if somewhat startling, profile inland from the sea. There is a low coastal tideland of flat, highly saline sand and silt composition, sometimes inundated, especially near the sea when high tides are heightened by northerly winds. These tide flats, lying at or near the sea level, extend as much as 40 kilometers in the western sector of the land, gradually diminishing in breadth, until at Mirfa [Al Marfa'] and Al Mughayrā the tideland is pinched out. Eastward they increase in breadth, again extending inland 10 or 15 kilometers off the coast, are hills rising some 100 meters, forming a landmark worthy

of note. These hills are of "sedimentary and igneous rocks in dome complex," "laminated, indurated siltstone and shale interbedded with thin limestone." The predominant rocks include discontinuous masses of rhyolite, quartzite, and chlorite schist.<sup>2</sup> These "jabals," or hills, no doubt consist of rocks of the basement complex pushed up through the sediments by unexposed salt plugs.

Encompassing the tideland flat is a low rise featuring limestone hillocks and outcroppings, in back of which stretches a plateau of about 24 kilometers in breadth. This plateau rises in elevation until, at about 50 kilometers inland, the desert floor is some 100 meters above sea level. This area is known centrally and widely as Al Taff [Aṭ Ṭaff]; in the west it is the Baynūnah, and in the east, from whence it noses out to the coast near Ras Ghanāḍah, it is Al Habl. The area is sparsely vegetated. In some places it is overlaid with low, white, sand ridges lying parallel to the winds (NW.-SE.), covered with relatively heavy vegetation of salt-resistant shrubs. In other sectors there are often barren migrant dunes of barchan form, usually isolated, 5 to 10 meters above the substratum, which may be sparsely vegetated alluvial gravel plain, or one of the commonly intermittent "subklas" (salt flats of calcareous lime, gypsum, sand, and silt). Further inland the dunes occur in increasing density and are of increasing height, up to 15 meters above the desert floor. The sands, having changed in color from white to tan to rusty, rosy red, are then formed in belts, 4 or 5 to 10 kilometers wide, lying parallel to the prevailing wind direction. These belts are separated by narrower expanses exposing the desert floor, which is usually an alluvial gravel mantle underlain with sand, or more rarely, laminated sandstones, also underlain with sand. This area, widely known as Al Dafrah [Az Zafrah], called Al Maghrib in the western part of the country. East and north of Al Maghrib is Al Qafā', to the east Al Ḥumrah [Al Ḥumrā]; to the northeast of Al Ḥumrah is Al Khatam, while to the southeast is Al Manādir. Actually, there is nothing that distinguishes these areas other than their names, which may have meant something to the Bedouin in days gone by, while searching out grazing and brackish wells no longer used. Today, even the local Bedouins are confused as to the place names of the various areas that have no real geographic or physical separation.

Further south the sandy areas continue to increase in size and density to become a veritable sea of sand, erratic forms of sand ridges, with dunes overlying the ridges and one another. There are sparsely scattered limestone "jabals" or hillocks and exposures of the desert floor. Finally, in the vicinity of Al Liwā', the sand ridges reach heights of over 200 meters above the substratum. These great sands, called Al Batin, melt into the sands of Al Kidan [Al Kidn], whence the Rub' al Khali reaches its many miles to the south, east, and west to embrace an empty desert the size of Texas!

<sup>2</sup> "Geological Map of the Arabian Peninsula," 1963, scale 1:2,000,000, United States Geological Survey, Department of the Interior.

In the eastern sector of the geographical province that is Abu Dhabi the land-form described is abruptly transformed into a basement complex that forms the Oman Mountains, Al Hajar al Gharbī, which rise spectacularly—barren and craggy. These mountains stand on the fringe of the path that is wet by the monsoon and catch sufficient rainwater to provide and recharge groundwaters, notably in the areas of Buraymī Oases and Dubai.

#### VEGETATION

In the oases of Al Liwā' are to be found good stands of date palm, some citrus fruits, and limited garden produce. Cultivated plants of Al Buraymī include dates, alfalfa, vegetables, and fruit, including mangoes, bananas, and sweet and sour oranges (Rentz, 1960; Harrison, 1959).

Desert plant life is sparse, but varied. According to Thesiger (1959), plants found in the sands include: "abal" (*Calligonum* sp.), "rimram" (*Heliotropium kotschyi*), "zahra" (*Tribulus* spp.), "karia" (*Heliotropium digynum*), all of which have substantial roots. When the roots are exposed by sand erosion they are used for fuel by the populace. The "abal" root is used to make camel switches. Other plants include "ilb" (*Ziziphus spina-christi*), a small tree with shining silver thorns found in wadis and depressions, "arad" (*Salsola cyclophylla*), "harm" (*Zygophyllum* spp.), both able to subsist in very salty soils fed by saline waters, hence to be found in some of the "subkhas," or salt flats, "qassis" (*Cyperus conglomeratus*), a bush with long slender leaves, "had" (*Dipterygium glaucum*), "Birkan" (*Limeum arabicum* and *L. indicum*), "ghal" (*Prosopis spicigera*), "harmal" (*Rhazya stricta*), "rahath" (*Eremobium aegyptiacum*), "sadan" (*Neurada procumbens*), "saf" (*Nannorrhops arabica*), and "shina" (*Seidlitzia rosmarinus*). The Arabic names of plants quoted above are as transliterated by Thesiger. The names are no doubt colloquial and, as is the case with most of the animals, would not necessarily be used in other parts of Arabia or in other Arab countries.

#### FAUNA

Not many years ago the wildlife of Abu Dhabi must have been of great interest. Indeed, it has been reliably reported to the author time and time again by some of the older native Bedouin that they can remember in their lifetimes that there were gazelle (at least two species) in profusion, white oryx, porcupines, the ratel, wildcats, at least two color phases of wolves, a gray and a red, striped hyenas, jackals, and other animals.

Among the birds were to be found the ostrich (*Struthio camelus syriacus*), great vultures (? Griffon vultures, *Gyps fulvus fulvus*), the Egyptian vulture (*Neophron percnopterus*), the lesser bustard ("hubara," *Chlamydotis undulata macqueni*) in great numbers during the winter season, multitudes of sand



grouse, hawks and eagles. The Landrover with 9.00 × 16 tires, having a remarkable proficiency in traversing the sands, and the automatic shotgun, have put an end to all this.

Today, animal life on the desert is certainly scarce. An occasional hare, more rarely a fox, is to be seen. Desert rats, sand mice, jerbils, hedgehogs, in short, only those animals not worthy of the pot, not worthy of a shot, or too difficult to exterminate, such as the hare and the fox, have not been killed off or driven into the big sands or the mountains. Fortunately, in the remoteness of the Rub' al Khali, where even the most foolhardy as yet dare not venture, and the Oman Mountains to the east, where automobiles cannot travel, many of the animals still exist (with the exception of the ostrich, it seems). A large leopard (2 meters from nose to tail tip) reportedly was shot about 1963 in the Oman Mountains. In addition to the animals named as now extinct on the desert (with the exception of the oryx which does not live in the mountains), a unique species of wild goat, the Arabian Tahr (*Hemitragus jayakari*) is to be found in the mountains of Oman. The far reaches of the Rub' al Khali still provide sanctuary for the white oryx, and there are many gazelle in the foothills of the mountains and in the big sands. Harrison (1959, 1964) reports the following mammals in the vicinity of Al Buraymī and Sharja (Ash Sharigah): hedgehogs (*Paraechinus aethiopicus pectoralis* and *P. hypomelas niger*), Cheesman's gerbil (*Gerbillus cheesmani*), Baluchistan gerbil (*Gerbillus nanus*), ship rat (*Rattus rattus*), sand rats (*Meriones crassus crassus*), common mice (*Mus musculus prae-textus*), Arabian hare (*Lepus arabis omanensis*), as well as at least five species of bats (*Rhinopoma hardwickei muscatellum*, *Tophozous nudiventris zayidi*, *Asellia tridens murraina*, *Trizenops persicus macdonaldi*, *Pipistrellus kuhli*).

A rich variety of birds is still to be found in Abu Dhabi, especially in the oases areas and on the sea coast. In the desert, even during the hottest days of the driest season, can be found the "Umm Salem" ("mother-of-peace"), the desert thrasher. According to Harrison (1959) and Meinertzhagen (1954) the birds of Abu Dhabi include: the yellow-vented bulbul (*Pycnonotus capensis xanthopyges*), white-cheeked bulbul (*Pycnonotus leucogenys mesopotamiae*), spotted flycatchers, house sparrows, doves (*Streptopelia senegalensis cambayensis*), little green bee-eaters (*Merops orientalis cyanophrys*), Egyptian vultures, Scops owl (*Otus scops brucei*), barn owl (*Tyto alba erlangeri*), nightjar (*Caprimulgus europaeus*), great gray shrike (*Lanius excubiter aucheri*), red-tailed shrike (*Lanius cristatus phoenicuroides*) desert lark (*Ammomanes deserti*), black-crowned finch-lark (*Eremophryx nigriceps affinis*), Arabian babbler (*Turdoides squamiceps*), European bee-eater (*Merops apiaster*), spotted sand grouse (*Pterocles coronatus*), Kentish plover (*Charadrius alexandrinus*), greater sand plover (*Charadrius leschenaultii*), white-cheeked tern (*Sterna repressa*), warblers, pied wheatear (*Oenanthe leucomela*), bifasciated lark (*Certhi-*

*lauda alaudipes*), yellow-throated sparrow (*Petronia flavicollis transfuga*), a desert subspecies of the house sparrow (*Passer domesticus indicus*). Other birds seen include herons, bitterns, lesser bustard, sand plovers, ravens, rollers (*Coracias benghalensis*), the hoopoe (*Upupa epops*), and others.

Insects on the sands are myriad. At the slightest attraction flies are so thick as to defy imagination. Among the more spectacular insects are the preying mantids and the scarabs. Scarabs are seen in the spring, busily and hurriedly living their lives on the desert sands, some flying about looking for mates or suitable camel droppings in which to lay their eggs, while others are pushing a ball of dung with their hind legs, walking backwards looking for moist sand to bury the egg-dung ball. Others may be observed excavating a hole for their egg-dung ball with an efficiency to put modern earth-moving equipment to shame, depositing the curious egg and back-filling the excavation so that another generation of scarabs will emerge the following spring.

Scorpions are all too common, a green type and a black one, commonly 10 to 12.5 cm. in length. A huge spider, the "camel spider," whose leg spread is as much as 10 cm. or more, is a hungry carnivore with a translucent belly which will invade a campsite and hurriedly run around the campfire or other lights, devouring each small insect until it becomes a real mystery as to where he is putting them all, and one expects the shiny belly to burst.

Domestic animals in Abu Dhabi are principally the dromedary camel, the broad-tailed sheep, many goats, and the ass. In the town of Abu Dhabi and at Buraymī, the sheiks keep some fine saddle horses, mostly recent imports from Iraq. Cows and poultry are limited and of poor quality.

#### HISTORY AND BOUNDARIES

Because of the extreme aridity of the land, the region now known as Abu Dhabi probably has been sparsely populated through the ages. No archeological work has been done, and little is known about the area prior to 200 years ago, at which time the Al Bu Fallah, a division of the Banī Yās, established the town of Abu Dhabi. They have maintained their rule ever since. The Arab population consists of semi-nomadic and nomadic peoples, principally of the tribes of Banī Yās and the Manasir. Samuel Barret Miles, a Nineteenth Century traveler in Arabia, speaking of the Al Taff, says, "... frequented only by the wandering Beduins of the Minaseer, Beni Yas, Al-Morra, Beni Hajir and Dowasir tribes" (Mann, 1964). No doubt the last three tribes named are present, if at all, in much lesser numbers than the Banī Yās or Manasir.

Some of the Banī Yās settled in poor villages on the coast to find sustenance as fisher folk, while a few others engaged in pearling. A very few of the more hardy plied the crafts of piracy and slaving, while the rest lived in the hinterland, making their living from animal husbandry and the produce of the oases of Buraymī and Al Liwā'. So, with some few thousand Arab Bedouin fighting one

another for the meager fruits of a poor land, while opposing infringing tribes from the east and west, Abu Dhabi came into existence.

In the early Nineteenth Century, during the heyday of British "Gunboat" diplomacy, foreign influence came to this remote land. It is said that British public opinion demanded an end to the slave trade between British African colonies and the Moslem countries of Arabia, and that the British wished to secure their sea lanes. In any event, the British dominated Abu Dhabi, as well as the entire Arabian coast from the mouth of the Red Sea to the Qatar Peninsula and Bahrain Island. A treaty made as early as 1820, and subsequent treaties, provided in essence, that Great Britain would protect Abu Dhabi while seeing to the country's foreign affairs, but the prerogative of presiding over the people and domestic affairs remained with the local ruler. The treaty of 1820 and subsequent treaties applied not only to Abu Dhabi, but to six other sheikdoms on the Persian Gulf and the Gulf of Oman as well, and the area came to be known as the "Trucial States," "Trucial Coast," or "Trucial Oman" (fig. 2). The Sheikdoms are fragmented, and continual strife exists as to boundaries, authority, and allegiance. The six Trucial States are Abu Dhabi, Dubai, Shārja [Ash Shārigah], Ajman, Umm al Qaiwain [Umm al Qaywayn], Ras al Khaimah [Ras al Khaymah], and Fujairah [Al Fujayrah]. Dubai and Shārjah share undecided boundaries with Abu Dhabi. The Sultanate of Oman, also having a somewhat nebulous boundary with Abu Dhabi, notably sharing the Buraymī Oases. The British government considers all boundary disputes between the Trucial States, and between Oman and any of the Trucial States, as internal affairs.

Saudi Arabia, Abu Dhabi's neighbor to the south and west, claims sovereignty over most of the territory claimed by Abu Dhabi, leaving it an area of about 11,000 sq. km., while Abu Dhabi has lodged a claim that embraces approximately 91,250 sq. km. This dispute came very much alive in 1949 when geological parties of the Arabian American Oil Company, concessionaires to the government of Saudi Arabia, commenced work in territory claimed by Abu Dhabi. Negotiations between the British, acting on behalf of Abu Dhabi (with their own potential petroleum interests being, as it were, incidental) and Saudi Arabia proved fruitless. In 1951, the British government raised the Trucial Oman Levees (later called Scouts) in order to meet any ensuing conflict by force. British officers commanding troops recruited from the Trucial States and Oman formed one of the hardest bodies of desert forces, able to live, work, and fight under such adverse desert conditions as to command the respect and admiration of any man.

In 1952 a forceful Saudi occupation of one of the villages (Hamasa) of the Buraymī Oases occurred. The Saudi force was not repelled but was contained by The Trucial Oman Scouts, assisted in the emergency by regular British forces. Containing action ceased in 1957 after all negotiations had failed, and

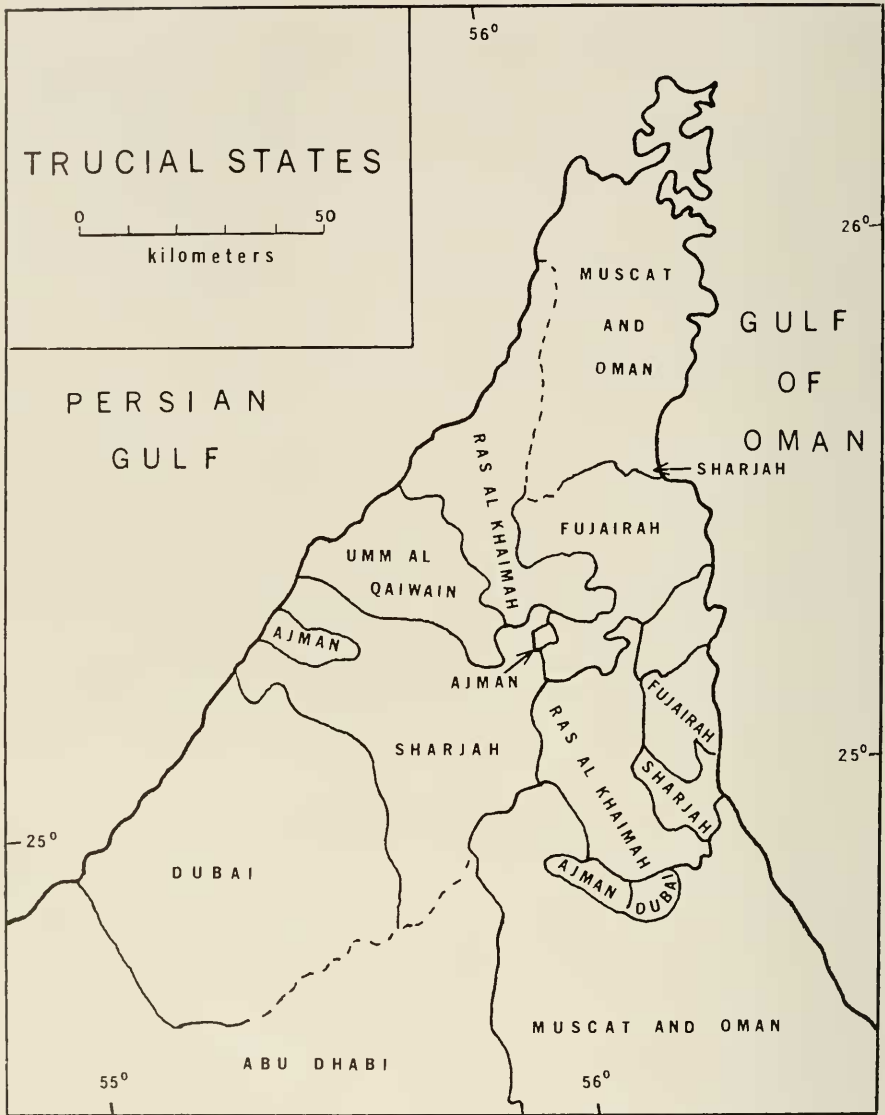


FIGURE 2. Trucial States. Based on data from the report of the London Chamber of Commerce Trade Mission, 16 March to 6 April 1963, "Trade Prospects in the Arabian Gulf."

the Saudi occupation force was then forcibly evicted by the Trucial Oman Scouts. The Trucial Oman Scouts thus protect a boundary that includes the Liwā' Oases as being in Abu Dhabi, and also six of the eight villages of Buraymī Oases, the other two being in Oman.



## GOVERNMENT AND ECONOMY

In 1958 oil was discovered offshore on Dās Island, followed in 1960 by on-shore discoveries of importance. Proven reserves thus far (mid-1966) are estimated at 10 billion barrels,<sup>3</sup> probably a conservative estimate like most oil company figures released for publication. Production is now about 340,000 barrels per day, giving the government an estimated income from royalties for 1966 of some \$80.1 million.<sup>3</sup> Abu Dhabi's population has been estimated as 17,500 (see above). The writer's impression from discussions and off-hand calculations made with tribal leaders and others of the political and military establishments is that 12,000 Abu Dhabi nationals is a closer figure. With a maximum possible population of 20,000, the projected income for 1966 represents a per capita income of over \$4000, a figure increasing daily and giving every indication of continued increase.

Under these confused and irregular circumstances, Sheikh Shakhbut ibn Sultan Al Bu Falah (of whom it is said that only two of his last 11 predecessors died of natural causes,<sup>4</sup> the rest being victims of fratricide, patricide, and other assassinations) holds a determined, if sometimes hesitant, control over the land and its people. Changes in Abu Dhabi are taking place with more than some reluctance and resistance, but with a pronounced and shocking rapidity.<sup>5</sup>

The area of Abu Dhabi is difficult to determine, owing to the disputed boundaries. However, Abu Dhabi's *de facto* influence is fairly well established over some 64,750 sq. km. Political boundaries onshore are held in common with Qatar, on the northwest (according to an Abu Dhabi claim which may or may not be realized), with Saudi Arabia, to the west and south, with Oman, to the east, and with Shārjah and Dubai to the north and northwest.

## HERPETOLOGICAL COLLECTING—1964

In the above setting a herpetological collection was made, while meeting the pressure of dawn to dark daily work. Fortunately a medical attendant, Mr. Chintamani Khemanand, a Nepalese pharmacist working as first aid man for the National Contracting Company, had acquired a small collection of snakes in the vicinity of Jabal Dhannah (Az Zannah) in 1962 and 1963. These specimens were turned over to the author for dispatch to the California Academy of Sciences. One specimen, CAS 97805, *Diplometopon zarudnyi*, was proudly brought back from the Liwā' in a bag of sand by an aged Bedouin. A few lizards were caught at Al Tarīf, and a few on the road between the town of Abu Dhabi and

<sup>3</sup> Middle East Economic Survey, vol. 9, no. 23, April 8, 1966, pp. 3 and 5.

<sup>4</sup> (Mann, 1964.) A study of Appendix I, "Genealogy of the Al Bu Falah Sheikhs of Abu Dhabi," and Appendix II, "Chronology of Events," pp. 120-128, shows that of the 12 Sheikhs of the Al Bu Fallah (the present ruler [prior to September, 1966, Ed.] being the twelfth), six have been assassinated while in power, two died of natural causes while in office, the remaining three having been deposed and expelled.

<sup>5</sup> This essay was written several months prior to September, 1966, when it was reported that Sheikh Shakhbut had been deposed and exiled by his half-brother, Sheikh Zaid.

Dubai. Unfortunately, the remainder of the collection was restricted to the sand area of Ḥabshān-Bu Hasa.

One species observed, but not collected because of lack of receptacles for preservation, was the desert monitor (*Varanus griseus*). Several individuals of this large lizard were found and photographed by the author.

The author had employed two old grizzled Bedouin to act as watchmen over the road-building equipment when it was parked overnight. These two old men had a crudely built jump trap, about number 2 size. Each evening or early morning one or the other would leave the tent and walk out across the desert gathering roots and brush and camel dung for fuel for their fire and search out the burrow of a "thub," the spiny-tail lizard (*Uromastix microlepis*). When an occupied burrow was found, the trap would be set at the entrance. Almost every evening one could see one of these old men returning to the tent with a "spiny-tail" dangling from a length of rope. The lizard would be duly butchered with the head ritually pointed toward Mecca, and as the simple prayer, "In the name of God—God is Greatest," was uttered, the head would be nearly severed to thoroughly bleed the beast. The animal would then be broiled or cooked in a stew. The meat, in the writer's opinion, is excellent. It is doubtful that, except on holidays or other rare occasions, these two old men ever ate any other meat than that of *Uromastix*.

In Thesiger's (1959) book, "Arabian Sands," there is reference to eating sand skinks (p. 147). Thesiger says, "I asked what he had been given to eat [speaking to one of his companions who had visited the Liwa]. 'Bread, dates, and a stew made from skinks,' was the reply." No doubt the sand skink (*Scincus muscatensis*) is eaten by the Bedouins, as so many Bedouins have reported to the writer, although the writer has never been present at such a feast, and has not, therefore, partaken of such repast, the thought of which, in any event, is not appetizing. It is a beautiful sight while driving through the desert to see the sand skink actually dive into the sand, reflecting sometimes a flash of bright light, as a knife blade turned in the sun. The skink actually swims down into and through the sand, and is not easy to catch. However, they are present in great numbers.

There are undoubtedly many species of reptiles and amphibians in Abu Dhabi not represented in my collection. Haas (1957) records *Stenodactylus arabicus*, and *Eremias adramitana* from Abu Dhabi, *Bufo pentoni* and *Bufo dhufarensis* from "Buraimi." Others have been described to the author by the Bedouins. There is, of course, the sea turtle, *Chelonia mydas*, which, because of the extensive petroleum exploration in offshore areas, has become rather scarce. The Bedouin describe a very dangerous black snake, which is no doubt *Walterinnesia aegyptia*, and a deadly red snake, which is possibly *Naja haje arabica*. None of the frogs, toads, or turtles of the oases areas were collected, as there was no opportunity to visit these areas except in passing.

There are, of course, the standard stories of two-headed snakes, with a head

at each end; there are snakes that when chopped in half immediately grow a tail at one end and a head at the other and become two snakes; there are the snakes that fly, etc., etc. The Bedouin really believe that *Walterinnesia* can appear as a she-camel full with milk, and as a thirsty wanderer approaches, the snake returns to true form and bites the man. Also, a maiden may be heard calling for help in the desert darkness, and actually this, too, is the dreaded *Walterinnesia* luring another victim to his doom.

Through the length and breadth of Arabia, as elsewhere, it seems that snakes are credited with an uncanny ability to exact vengeance for the death of one of their "brothers." The brother of a killed snake will track down the murderer and bite him and kill him. At the very least, the "genii" of the dead snake will haunt the killer until some great misfortune or illness befalls him.

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